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BULLETIN

OF THE

TORREY BOTANICAL CLUB

JULY, 1915

Studies of West Indian plants—VI

NATHANIEL LORD BRITTON

35. THE GENUS COCCOLOBIS IN CUBA

- A. Leaves 2-13 mm. long; inflorescence one- to three-flowered [RHIGIA].
 Leaves spinulose-mucronate. 1. *C. armata*.
 Leaves emarginate at both ends. 2. *C. microphylla*.
- B. Leaves 2 cm. long or longer; inflorescence many-flowered.
1. Leaves spinulosemucronate.
 Racemes loosely flowered; leaves acute. 3. *C. pilonis*.
 Racemes densely flowered; leaves acuminate. 4. *C. woodfredensis*.
2. Leaves not spinulose-mucronate.
 Leaves very large, suborbicular, deeply cordate; fruit large; halophytic tree or shrub. 5. *C. Uvifera*.
 Leaves smaller, rarely cordate; fruit small; mesophytes.
 Pedicels filiform, in fruit 8-12 mm. long, as long as the fruit or longer.
 Leaves flat, their margins not revolute. 6. *C. coriacea*.
 Leaves bullate, their margins strongly revolute. 7. *C. Cowellii*.
 Pedicels shorter than the fruit.
 Rachis of the raceme glabrous.
 Leaves almost veinless above, few-veined beneath, rounded, or emarginate. 8. *C. nipensis*.
 Leaves reticulate-veined on both sides.
 Fruiting pedicels 2.5-4 mm. long; fruit 8-12 mm. long. 9. *C. laurifolia*.
 Fruiting pedicels 1.5 mm. long or less; fruit smaller.
 Leaves obtuse or emarginate at apex, obtuse at base. 10. *C. retusa*.
 Leaves acuminate or acute.
 Leaves acuminate at both ends. 11. *C. cubensis*.
 Leaves acute at apex, oblique at base. 12. *C. colomensis*.

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Rachis of the raceme puberulent or pubescent
(or glabrous in *C. Wrightii*?).

Raceme stout, 8–20 cm. long; leaves 8–17 cm.
long; flowers sessile.

Leaves loosely reticulate-veined; flowers
white.

13. *C. costata*.

Leaves densely reticulate-veined; flowers
bright red.

14. *C. Shaferi*.

Raceme slender, shorter; leaves smaller.

Leaves not reticulate-veined above.

Raceme geniculate.

15. *C. geniculata*.

Raceme not geniculate.

Fruiting pedicels less than 0.5 mm.
long.

16. *C. rufescens*.

Fruiting pedicels 1–2 mm. long.

Leaf-margins reflexed.

17. *C. reflexa*.

Leaf-margins not reflexed.

18. *C. praecox*.

Leaves reticulate-veined above.

Leaves short-acuminate.

19. *C. benitensis*.

Leaves acute or obtuse.

Pedicels 0.8 mm. long or less.

Leaves coriaceous, oblong-
lanceolate, 5 cm. long or less.

20. *C. pallida*.

Leaves chartaceous, ovate or
elliptic, larger.

Racemes as long as the
leaves or longer; petioles
5–10 mm. long.

21. *C. diversifolia*.

Racemes shorter than the
leaves; petioles 3 mm.
long or less.

22. *C. brevipes*.

Fruiting pedicels 1.5–3 mm. long.

23. *C. Wrightii*.

1. *C. ARMATA* C. Wright; Griseb. Cat. Pl. Cub. 62, 283. 1866

TYPE LOCALITY: Near San Marco.

DISTRIBUTION: Dry, rocky hills, Oriente, Santa Clara. Endemic.

The plant becomes much larger than the original description indicates; on the Rio San Juan, Santa Clara, it forms a tree 6 m. high, and on the United States Naval Station, Guantanamo Bay, Oriente, trees up to 10 m. high were observed.

2. *C. MICROPHYLLA* C. Wright; Griseb. Cat. Pl. Cub. 62. 1866

TYPE LOCALITY: Western Cuba.

DISTRIBUTION: Coastal thickets, Santa Clara, Pinar del Rio. Endemic.

At Coloma, Pinar del Rio, forms a virgate tree 5 m. high.

3. *C. PILONIS* Urban, Repert. 13: 445. 1914

TYPE LOCALITY: Loma Pilon, near Holguin, Oriente.

DISTRIBUTION: Barren rocky soil, Oriente, Santa Clara (?). Endemic.

The Santa Clara specimens, collected near the city of Santa Clara (*Britton & Wilson 6189, Britton & Cowell 13325*), are in foliage only and thus not determinable with certainty.

Both this species and the following one are related to *C. flavescens* Jacq., of Hispaniola. The type is from a shrub 1.6 m. high.

4. *Coccolobis woodfredensis* sp. nov.

Similar to *C. pilonis*, and to *C. flavescens* Jacq. (of Hispaniola), the leaves spinulose-mucronate. A shrub, 6 m. high, glabrous throughout, the rather stout branches zig-zag; leaves coriaceous, ovate to ovate-lanceolate, 3-6 cm. long, shining above, dull beneath, inconspicuously veined, the under surface very finely reticulated, the apex spinulose-mucronate, the base rounded, obtuse or subcordate, the stout petioles scarcely 2 mm. long; racemes very narrow, 3-4 cm. long, densely many-flowered; fruiting pedicels about 1 mm. long; old fruit ovoid, acutish, 4 mm. long, 2 mm. thick.

Dry rocky hillside, between Piedra Gorda and Woodfred, Sierra Nipe, Oriente, 400-500 m. alt. (*Shafer 3180*).

5. *C. UVIFERA* (L.) Jacq. Enum. 19. 1760

TYPE LOCALITY: Shores of the Caribbean Sea.

DISTRIBUTION: Coastal thickets, all provinces and Isle of Pines; occasionally on hillsides back from the coasts: Florida; West Indies; continental tropical America.

6. *C. CORIACEA* A. Rich. in Sagra, Hist. Cub. 11: 184. 1850

C. calobotrys Meisn. in DC. Prodr. 14: 157. 1857.

TYPE LOCALITY: Vuelta de Abajo, Cuba.

DISTRIBUTION: Pinar del Rio (?), Havana, mountains of Oriente. Endemic.

Meisner cites Sagra's Nos. 290 and 544, on which he based *C. calobotrys*, from the vicinity of Havana, but the plant is not known to grow in Havana Province. I have not seen the type specimens. A specimen from Ensenada de Mora, Oriente (Britton, Cowell & Shafer 13003), is from a slender tree 7 m. high.

7. *Coccolobis Cowellii* sp. nov.

A glabrous shrub, 1.5 m. high, with few, stout, ascending branches. Leaves thick-coriaceous, shining, deeply cordate at the nearly sessile base, bullate, with strongly revolute margins, diversiform, some ovate to ovate-elliptic, 5-9 cm. long, rounded at the apex, some elongated-lanceolate, attenuate-acuminate, 10-18 cm. long; principal venation impressed above, prominent beneath; ultimate venation obscure on both surfaces; racemes terminal, nearly sessile, 1-3 dm. long, the rachis and pedicels glabrous; pedicels filiform, 3-6 mm. long, spreading; bracts scarcely 1 mm. long, ovate, acute, about as long as the nearly truncate ochreolae; flowers bright red, 3 mm. long; perianth-lobes oblong, obtuse; fruit ovoid, acute, 4 mm. long, crowned by the calyx-lobes.

Barren rocky soil, savannas near Camaguey (Britton & Cowell 13151).

8. *C. NIPENSIS* Urban, Repert. 13: 445. 1914

TYPE LOCALITY: Pine lands, 500-650 m. alt., Sierra Nipe, near Woodfred, Oriente.

DISTRIBUTION: Mountains of northern Oriente. Endemic.

This species is noted by Dr. Shafer as forming a tree up to 10 m. high.

9. *C. LAURIFOLIA* Jacq. Hort. Schoen. 3: 9. *pl.* 267. 1798
C. floridana Meisn. in DC. Prodr. 14: 165. 1857.

TYPE LOCALITY: Caracas.

DISTRIBUTION: Thickets and woodlands at lower elevations near the coasts, Oriente, Camaguey, Matanzas, Isle of Pines: Florida; Bahamas; Jamaica; Hispaniola to St. Croix; Venezuela.

10. *C. RETUSA* Griseb. Cat. Pl. Cub. 61. 1866

C. leoganensis parvifolia Griseb. Cat. Pl. Cub. 61. 1866.
Hyponym.

TYPE LOCALITY: Eastern Cuba.

DISTRIBUTION: Thickets and hillsides, Oriente, Santa Clara, Pinar del Rio: Hispaniola (?).

11. *C. CUBENSIS* Meisn. in DC. Prodr. 14: 162. 1857

TYPE LOCALITY: Cuba [near Santiago].

DISTRIBUTION: Oriente. Endemic.

Dr. Shafer's 4229, from rich woods in the alluvial valley of Rio Yamanigüey, northern Oriente, referred to this species from description, is from a tree 5 m. high.

12. *Coccolobis colomensis* sp. nov.

A glabrous shrub, 2 m. high, with slender twigs. Leaves chartaceous, ovate to elliptic, 4–10 cm. long, bluntly acute at the apex, obliquely obtuse at the base, strongly reticulate-veined and shining on both sides, the rather stout petioles 6–10 mm. long; racemes glabrous, terminal, nodding, much shorter than the leaves, 5 cm. long or less; ochreolae less than 0.5 mm. long; pedicels about 1.5 mm. long, spreading; flowers about 1 mm. long, the ovate perianth-lobes as long as the tube; anthers not exserted; young fruit ovoid, about 3.5 mm. long, short-coronate.

Marsh near Coloma, Pinar del Rio (*Britton & Gager* 7037).

13. *C. COSTATA* C. Wright; Sauvalle, *Anales Acad. Habana* 7: 343. 1870

C. leoganensis cordata Griseb. Cat. Pl. Cub. 61. 1866. Hyponym.

TYPE LOCALITY: Cuba [*C. Wright* 1393, eastern Cuba].

DISTRIBUTION: Mountains of Oriente; Porto Rico.

Dr. Shafer's 3084, which satisfactorily matches *Wright* 1393, is from a tree 8 m. high, at 400–500 m. alt. on the Sierra Nipe, in dry rocky thickets; he noted the flowers as white and the fruit red-black.

14. *Coccolobis Shaferi* sp. nov.

A shrub or small tree up to 4 m. high, the twigs and leaves glabrous. Leaves coriaceous, ovate or ovate-elliptic to lanceolate, 12 cm. long or less, strongly and rather densely reticulate-veined on both sides, obtuse, acute or acuminate at the apex, cordate at the base, the stout petioles about 1 cm. long; spikes dense,

slender, 6–12 cm. long, the rachis, bracts and ochreolae puberulent; flowers bright red, sessile, about 5 long, the short perianth-lobes rounded.

Hillsides and thickets, northern Oriente.

Type, *Shafer 4165*, from between Camp Toa and Camp La Barga, 400–450 m. alt.

15. *C. GENICULATA* Lindau, Bot. Jahrb. **13**: 141. 1891

TYPE LOCALITY: Near Puerto Principe, Cuba.

DISTRIBUTION: Known only from the type locality.

Referred by Grisebach to *C. punctata parvifolia* Griseb.

16. *C. RUFESCENS* C. Wright; Sauvalle, Anales Acad. Habana **7**: 343. 1870

C. punctata parvifolia Griseb. Mem. Am. Acad. II. **8**: 175. 1860.

C. rufescens longifolia Lindau, Bot. Jahrb. **13**: 143. 1891.

TYPE LOCALITY: Cuba.

DISTRIBUTION: Mountains of Oriente. Endemic.

17. *C. REFLEXA* Lindau, Bot. Jahrb. **13**: 141. 1891

TYPE LOCALITY: Cuba [*Wright 2256*].

DISTRIBUTION: *Britton & Cowell 13115*, from a tree 6 m. high, in savannas near Camaguey, appears to be the same as *Wright 2256*.

18. *C. PRAECOX* C. Wright; Lindau, Bot. Jahrb. **13**: 142. 1891

TYPE LOCALITY: Cuba.

DISTRIBUTION: Known only from the type specimens (*Wright 2253*).

19. *Coccolobis benitensis* sp. nov.

A much-branched shrub, up to 2 m. high, the twigs more or less tortuous, glabrous. Leaves coriaceous, ovate, or elliptic-ovate, 1.5–7 cm. long, glabrous, punctate, short-acuminate at the apex, rounded or obtuse at the base, densely prominently reticulate-veined on both sides, the primary veins prominent beneath, the petioles 1.5–4.5 mm. long; spike-like racemes very slender, short-stalked, 4 cm. long or less, the ochreae and rachis puberulent; flowering pedicels scarcely longer than the ochreolae, 0.5 mm. long or less; fruiting pedicels 1–1.5 mm. long; perianth (young) about

0.5 mm. long; fruit ovate-ellipsoid, 5–6 mm. long, about 3 mm. thick, dark red.

Wet mountains of northern Oriente. Type from vicinity of Camp San Benito, 900 m. alt. (*Shafer 4049*).

20. *C. PALLIDA* C. Wright; Griseb. Cat. Pl. Cub. 61. 1866

TYPE LOCALITY: Western Cuba, near San Marco.

DISTRIBUTION: Known only from the type locality [*Wright 2254*].

21. *C. DIVERSIFOLIA* Jacq. Enum. 19. 1760

TYPE LOCALITY: Caribbean Islands.

DISTRIBUTION: Cuba, collected by Read, according to Lindau: Bahamas; Jamaica; Hispaniola; Porto Rico; Vieques; St. Thomas; St. Jan; St. Croix; Saba; Anguilla (?); Antigua; Montserrat; Guadeloupe; Dominica; Martinique; St. Lucia; Barbadoes; Bonaire; Curaçao; Aruba. Planted in Bermuda.

22. *Coccolobis brevipes* sp. nov.

Twigs slender, densely puberulent. Leaves chartaceous, elliptic, 3–7 cm. long, bluntly acute at the apex, obliquely narrowed or rounded at the base, shining above, glaucescent beneath, glabrous and strongly reticulate-veined on both sides, the principal veins prominent beneath; petioles stout, 2–3 mm. long; racemes terminal, about 5 cm. long, densely puberulent; bracts puberulent, acute, scarcely 1 mm. long; ochreolae about as long as the bracts; flowering pedicels 0.5–0.8 mm. long; flowers about 1.5 mm. long, the perianth-lobes ovate.

Cuba (*Wright 2257* in herbarium of the Missouri Botanical Garden). Lindau, in Bot. Jahrb. 13: 152, cites this number as part of *C. Wrightii* Lindau, but the specimen here described is different from *Wright 1395*, the type of *C. Wrightii*.

C. brevipes is similar to *C. rufescens* C. Wright in leaf-form and pubescence, but the venation is quite different.

23. *C. WRIGHTII* Lindau, Bot. Jahrb. 13: 151. 1891

TYPE LOCALITY: Near Monte Verde, Oriente.

DISTRIBUTION: Mountains of northern Oriente.

Referred by Grisebach to *C. tenuifolia* L.

36. ADDITIONAL SPECIES OF TABEBUIA GOMEZ

The type species is *Bignonia Tabebuia* Vell., of Brazil, a species with simple leaves. It is not possible to separate the group into two genera, the one with simple, the other with compound leaves, as has been proposed by several authors,* calling the compound-leaved species *Tecomas*, and the true type of *Tecoma* Juss. is *Bignonia stans* L. (*Tecoma stans* HBK., *Stenolobium stans* Seem.). The two-lipped calyx of the type species of *Tabebuia* is not constant through the group.

***Tabebuia Brooksiana* sp. nov.**

A tree, up to 30 m. high. Leaves 4-7-foliolate; petioles 12 cm. long or less; petioles slender, 1-4 cm. long; leaflets oblong, oblong-lanceolate or oblong-ob lanceolate, chartaceous, 5-12 cm. long, 4 cm. wide or less, faintly shining above with the veins impressed, dull, mostly finely reticulate-veined when mature, and lepidote beneath, with the midvein and lateral veins prominent, obtuse, acute or retuse at the apex, the base obtuse or acutish; flowers clustered; calyx 2-lipped, 10-15 mm. long; corolla pink, 5-6 cm. long, the tube about 5 mm. long, the narrowly campanulate throat about 3.5 cm. long, the limb about 1.5 cm. long, its undulate lobes ciliate.

Woodlands, provinces of Oriente and Camaguey, Cuba, from sea-level up to 350 m. altitude. Type from Ensenada de Mora, Oriente (*Britton, Cowell & Shafer 12985*). Referred by Grisebach to *Tecoma Leucoxydon* Mart. and to *T. Leucoxydon reticularis* Griseb. The species is named in honor of Mr. Theodore Brooks of Guantanamo, who has rendered important aid to scientific exploration. *Tecoma heptaphylla* A. Rich. in Sagra, Hist. Cub. 11: 106 (not Martius), described as with 7-foliolate leaves from Vuelta de Abajo (Pinar del Rio), Cuba, is not known to me; I have seen no species with 7-foliolate leaves from western Cuba.

***Tabebuia Shaferi* sp. nov.**

A tree, up to 10 m. high. Larger leaves 6-8-foliolate; petioles 3-4 cm. long; petiolules 2 cm. long or less; leaflets ovate-oblong to suborbicular, chartaceous, the larger 6 cm. long, 3-5 cm. wide, dark green above, paler beneath, minutely and densely reticulated

* See Urban, Symb. Ant. 7: 377.

on both sides, the midvein impressed above, prominent beneath, the apex rounded or obtuse, the base subcordate; "flowers pinkish"; capsule 12 cm. long; seeds 5 mm. long, 7 mm. wide, the wings 5 mm. wide.

Along a small stream in the Pinales southeast of Paso Estancia, Oriente, Cuba (*Shafer 1710a*). Apparently the same as *C. Wright 3043*, referred by Grisebach to *Tecoma Leucoxylon* Mart., *forma foliolis latioribus*.

***Tabebuia pachyphylla* sp. nov.**

A tree, up to 12 m. high. Petioles stout, 6–8 cm. long; petiololes stout, 4 cm. long or less; leaflets 5–7, oblong to ovate-oblong, coriaceous, 5–12 cm. long, 2.5–6 cm. wide, lustrous above, dull and densely minutely reticulate-veined beneath, the midvein prominent, the lateral veins slender, the apex bluntly acute, the base rounded or subcordate; flowers pink, clustered; calyx 15 mm. long, bluntly lobed; corolla pink, glabrous, about 5 cm. long, its narrow throat about twice as long as the limb, its lobes rounded.

Mountains of northeastern Cuba. Type specimen collected at Arroyo del Medio, Sierra Nipe, Oriente, Cuba, 450–550 m. alt. (*Shafer 3645*).

***Tabebuia trinitensis* sp. nov.**

A tree up to 10 m. high. Leaves 4-foliolate or 5-foliolate; petioles slender, 8–11 cm. long; petiolules slender, 4 cm. long or less; leaflets thin-chartaceous, oblong or oblong-lanceolate, dark green above, paler and lepidote beneath, the larger ones 11–15 cm. long, 3–4 cm. wide, bluntly acute or acuminate at the apex, obtuse at the base, finely reticulate-veined and the primary venation rather prominent on both sides.

Hanabanilla Falls, Trinidad Mountains, province of Santa Clara, Cuba (*Britton, Earle & Wilson 4866*).

The description is from leaf-specimens only but these indicate that the tree is a species distinct from all others of Cuba. The ultimate venation and texture of the leaflets differentiate it from *T. Brooksiana* Britton.

***Tabebuia calcicola* sp. nov.**

A slender tree, up to 6 m. high. Leaves 2–5-foliolate; petioles stout, lepidote, 4–5 cm. long; petiolules lepidote, 1.5 cm. long or less; leaflets coriaceous, light green, ovate to ovate-oblong, 3.5–8

cm. long, 5 cm. wide or less, acute or bluntish at the apex, rounded at the base, finely reticulate veined and densely lepidote on both sides, the primary venation impressed above, prominent beneath; flowers clustered; pedicels stout; calyx 12–14 mm. long, shortly 2-lipped; corolla about 5 cm. long, the tube about 5 mm. long, the campanulate white throat 3 cm. long, the pink limb about 1.5 cm. long, the undulate lobes ciliolate; capsule 10–14 cm. long.

Limestone rocks and cliffs, province of Pinar del Rio, Cuba. Type collected near Guane (*Britton & Cowell 9772*).

***Tabebuia moaensis* sp. nov.**

A shrub, about 1 m. high. Leaves 3–5-foliolate; petioles stout, 2 cm. long or less; petiolules rather stout, 4–15 mm. long; leaflets elliptic to obovate, coriaceous, 3–5 cm. long, 1–2 cm. wide, lustrous above, dull and minutely reticulate-veined beneath, the primary venation not very prominent; calyx 10 mm. long, 2-lipped; corolla pink, about 4 cm. long, its rounded lobes ciliolate.

Camp La Gloria, south of Sierra Moa, Oriente, Cuba (*Shafer 8264*). This is, apparently, the same as *C. Wright 3047*, referred by Grisebach to *Tecoma haemantha*.

***Tabebuia pinetorum* sp. nov.**

A shrub, about 2.6 m. high. Leaves 3-foliolate or 4-foliolate; petioles very stout, only 3 cm. long or less, petiolules stout, 3–8 mm. long; leaflets elliptic or ovate-elliptic, coriaceous, 5–14 cm. long, 2.5–8 cm. wide, shining above, obtuse, rounded or bluntly short-pointed at the apex, obliquely cordate at the base, dull, lepidote and finely reticulate-veined beneath, the primary venation impressed above, prominent beneath; peduncles stout; calyx 12 mm. long, somewhat 2-lipped; "flowers lilac"; pod 11 cm. long, about 1 cm. thick.

Pine woods, Baracoa, Oriente, Cuba (*Underwood & Earle 1362*).

***Tabebuia arimaoensis* sp. nov.**

A small tree with slender, whitish twigs. Leaves 3-foliolate; petioles slender, 1–2.5 cm. long; leaflets subcoriaceous, shining above, with the midvein impressed dull beneath with the midvein prominent, lepidote on both sides, acute, the terminal one with a petiolule 2–5 mm. long, cuneate-oblong, 4–5 cm. long, 8–12 mm. wide, the lateral ones sessile, narrowly oblong, inequilateral, obliquely narrowed at the base. Flowers and fruit unknown.

Rocky hillside, Rio Arimao, province of Santa Clara, Cuba
(*Britton & Wilson 5797*).

***Tabebuia arenicola* sp. nov.**

A tree 7 m. high. Leaves 3-foliolate; petioles slender, 1–2.5 cm. long; leaflets subcoriaceous, shining, sparingly lepidote, and obscurely veined above, dull, closely lepidote and with prominent midvein and slender lateral veins beneath, inconspicuously reticulate-veined, obtuse or emarginate at the apex, the terminal one oblanceolate, 6–7 cm. long, 1.2–2 cm. wide, acute at the base, with a petiolule 4–6 mm. long, the lateral ones oblong, 4–6 cm. long, sessile by a very oblique base.

Sandy plain, Conde Beach, Guantanamo Bay, Oriente, Cuba
(*Britton 2142*).

***Tabebuia geronensis* sp. nov.**

Twigs stout. Leaves 1–3-foliolate; petioles slender, 1 cm. long or less; in 3-foliolate leaves, the lateral leaflets sessile, the terminal one short-stalked; leaflets oblong to ovate-elliptic or ovate-oblong, subcoriaceous, 3.5–7 cm. long, 3 cm. wide or less, obtuse and rounded or apiculate at the apex, rounded, subcordate, or lateral ones obliquely narrowed at the base, dull on both sides, lepidote above, finely and strongly reticulate-veined and densely lepidote beneath; fruiting calyx densely lepidote, 1 cm. long; capsule 8–9 cm. long, about 8 mm. thick, with a slender tip 6 mm. long.

Nueva Gerona, Isle of Pines, Cuba (*A. H. Curtiss, May, 1904*).

***Tabebuia Curtissii* sp. nov.**

Young twigs, leaves, pedicels and calyx densely lepidote-scurfy. Leaves 3-foliolate, or the upper and lower 1-foliolate; leaflets coriaceous, those of 1-foliolate leaves elliptic, 3–6 cm. long, obtuse at both ends, those of 3-foliolate leaves obovate or oblong-obovate, 8 cm. long or less, abruptly acute at the apex, narrowed at the base, the terminal one short-stalked, the lateral ones sessile, all smooth and shining above, dull, reticulate-veined and densely lepidote beneath; flowers in terminal clusters; pedicels 2 cm. long or less; calyx narrowly campanulate, 1.5 cm. long, its teeth triangular, acute; corolla 5 cm. long, its lobes broad and rounded.

Nueva Gerona, Isle of Pines, Cuba (*A. H. Curtiss, May, 1904*).

***Tabebuia crassifolia* sp. nov.**

A tree, 5 m. high. Leaves simple, oblong-elliptic, coriaceous, 6–12 cm. long, 4.5 cm. wide or less, obtuse or emarginate at the apex, somewhat narrowed at the base, when young densely lepidote and dark green above, pale and more densely lepidote beneath; when old strongly shining, elepidote and with impressed midvein above, remaining densely lustrous-lepidote and with very prominent midvein beneath, the secondary venation slender, neither surface reticulate-veined, the stout lepidote petioles 10–14 mm. long; flower solitary in an upper axil, its slender peduncle 3 cm. long, bearing a linear bractlet 2 mm. long below the middle; calyx densely lepidote, 1 cm. long, lobed but scarcely two-lipped; corolla light purple, about 5 cm. long.

By a spring, barren savannas southeast of Holguin, Oriente, Cuba (*Shafer 1285*).

***Tabebuia angustata* sp. nov.**

A tree up to 12 m. high. Leaflets 3–7-foliolate; petioles slender, 5–13 cm. long; petiolules slender, 5 cm. long or less; leaflets chartaceous, oblong or oblong-lanceolate, 5–18 cm. long, 9 cm. wide or less; dull on both sides, more or less lepidote, at least when young, densely and finely reticulate-veined beneath with a prominent midvein and slender lateral veins, the apex bluntly acuminate or acute, the base obtuse or acute; flowers clustered; calyx 2-lipped, 12–16 mm. long; corolla rosy-white, 5–6 cm. long, its narrow throat somewhat longer than the limb, its lobes ciliate; capsule 10–25 cm. long.

Woodlands and along streams at lower and middle elevations in wet or moist parts of Jamaica. Type collected on the south-western slope of Dolphin Head (*Harris 9253*). This tree has been referred to *Tecoma platyantha* Griseb.

***Tabebuia jamaicensis* sp. nov.**

A tree up to 12 m. high. Leaves 5-foliolate; petioles stout, 15 cm. long; petiolules stout, 2–9 cm. long; leaflets chartaceous, the three upper obovate, 18–23 cm. long, 9–12 cm. wide, somewhat narrowed at the base, the two lower ovate-elliptic, about 10 cm. long and 6 cm. wide, rounded or subtruncate at the base, all abruptly acuminate at the apex, finely reticulate-veined and loosely lepidote on both sides, the midvein and lateral veins prominent beneath; corolla whitish, glabrous, 5 cm. long, its cylindric tube about 8 mm. long, its campanulate throat 2.5 cm. long, its spreading limb about 1.5 cm. long, its lobes erose.

Hillside, Negril, Jamaica (*Britton 2020*). The description is based on one leaf and one flower.

***Tabebuia actinophylla* (Griseb.)**

Tecoma actinophylla Griseb. Cat. Pl. Cub. 194. 1866.

TYPE LOCALITY: Western Cuba.

DISTRIBUTION: Limestone cliffs, province of Pinar del Rio, Cuba.

***Tabebuia Sauvallei* nom. nov.**

Tecoma sanguinea C. Wright; Sauvalle, Anales Acad. Habana 6: 320. 1870. Not *Tabebuia sanguinea* DC.

TYPE LOCALITY: Border of Rio Carbuni, Manacal, near Trinidad, Cuba.

DISTRIBUTION: Hillsides and river banks, near Trinidad, province of Santa Clara, Cuba.

***Tabebuia Buchii* (Urban)**

Tecoma Buchii Urban, Symb. Ant. 3: 375. 1903.

Known only from the type locality, dry calcareous mountains, Morne La Pierre, Haiti.

***Tabebuia lepidota* (HBK.)**

Bignonia lepidota HBK. Nov. Gen. 3: 139. 1818.

Tecoma lepidota DC. Prodr. 9: 220. 1844.

TYPE LOCALITY: Havana, Cuba.

DISTRIBUTION: Barren soil, provinces of Camaguey, Santa Clara, Matanzas and Havana, Cuba; Bahamas.

Referred by Grisebach to *Tecoma lepidophylla* and to *Tecoma Leucoxylon* and by Combs to *Tabebuia lepidophylla*.

The species consists, apparently, of many races, differing in size, number and form of leaflets and size of flowers.

***Tabebuia Berterii* (DC.)**

Tecoma Berterii DC. Prodr. 9: 220. 1845.

TYPE LOCALITY: Santo Domingo.

DISTRIBUTION: Hispaniola, ascending to 1,200 m. altitude.

Tabebuia domingensis (Urban)

Tecoma domingensis Urban, Symb. Ant. 7: 376. 1912.

TYPE LOCALITY: Near Barahona, Santo Domingo.

DISTRIBUTION: Known only from the type locality.

Tabebuia revoluta (Urban)

Tecoma revoluta Urban, Symb. Ant. 7: 539. 1913.

TYPE LOCALITY: Between La Vega and Jarabacoa, Santo Domingo, at 700 m. alt.

DISTRIBUTION: Known only from the type locality.

Tabebuia acrophylla (Urban)

Tecoma acrophylla Urban, Symb. Ant. 3: 374. 1903.

TYPE LOCALITY: Mountains near Bilboro, Haiti, at 600 m. alt.

DISTRIBUTION: Known only from the type locality.

Tabebuia bibracteolata (Griseb.)

Tecoma bibracteolata Griseb. Cat. Pl. Cub. 193. 1866.

TYPE LOCALITY: Eastern Cuba.

DISTRIBUTION: Known only from the type specimens.

TABEBUIA HETEROPHYLLA (DC.) Britton, Ann. Mo. Bot. Gard. 2: 48. 1915

Rapuntia (?) *heterophylla* DC. Mém. Mus. Paris 9: 153. 1822.

Tabebuia triphylla DC. Prodr. 9: 214. 1845. Not *Bignonia triphylla* L.

Sandy soil and rocky hillsides, Mona, Porto Rico, Vieques, Culebra, St. Thomas, St. Croix, St. Jan, Virgin Gorda, Anagada; recorded from St. Barts and Barbadoes.

Referred by Grisebach to *Tecoma Berterii* DC., and by Urban to *Tecoma Leucoxylon* (L.) Mart.; this is not *Tabebuia leucoxylo* DC. Prodr. 9: 212.

Tabebuia myrtifolia (Griseb.)

Tecoma myrtifolia Griseb. Mem. Am. Acad. II. 8: 524. 1862.

Tecoma lepidota myrtifolia Maza, Anal. Hist. Nat. Madrid 19: 265. 1890.

? *Bignonia microphylla* A. Rich. in Sagra, Hist. Cub. **11**: 104. 1850. Not Lam.

TYPE LOCALITY: Matanzas, Cuba.

DISTRIBUTION: Coastal thickets, vicinity of Matanzas, Cuba.

***Tabebuia platyantha* (Griseb.)**

Tecoma platyantha Griseb. Fl. Br. W. I. 447. 1864.

Tecoma Brittonii Urban, Symb. Ant. **5**: 496. 1908.

Tecoma Brittonii decussata Urban, loc. cit. 497. 1908.

TYPE LOCALITY: On rocks, St. James, Jamaica.

DISTRIBUTION: Rocky woodlands, central parishes of Jamaica.

***Tabebuia bahamensis* (Northrop)**

Bignonia pentaphylla L. Sp. Pl., ed. 2, 870. 1763 (as to the Bahama plant of Catesby). Not *Tabebuia pentaphylla* (Juss.) Hemsl.

Tecoma bahamensis Northrop, Mem. Torr. Club **12**: 65. *pl.* 15. 1902.

TYPE LOCALITY: Near Nassau, New Providence, Bahamas.

DISTRIBUTION: Bahamas; Cuba.

37. THE GENUS ANASTRAPHIA D. Don

Type species: *Anastraphia ilicifolia* D. Don.

Founded on a specimen in the Lambertian Herbarium said to have come from South America; the plant was correctly attributed to Cuba by De Candolle (Prodr. **7**: 26. 1838).

1. Involucral bracts straight, erect or nearly so.

Involucre 2.5–3 cm. long.

At least some of the leaves spinulose-dentate.

Involucre campanulate.

All the involucral bracts lanate.

1. *A. ilicifolia*.

Only the outer bracts lanate, the inner glabrous.

Leaves distinctly reticulate-veined above.

All the involucral bracts linear-lanceolate, acuminate and erect.

2. *A. mantuensis*.

Outer involucral bracts lanceolate, merely acute, all somewhat spreading.

3. *A. montana*.

Leaves very indistinctly reticulate-veined above, but wrinkled; outer bracts ovate.

4. *A. Cowellii*.

Involucre long-attenuate at base, all its many bracts lanate.

5. *A. attenuata*.

- None of the leaves spinulose-dentate.
 - Involucral bracts tomentose. 6. *A. Picardae*.
 - Inner involucral bracts glabrous. 7. *A. crassifolia*.
- Involucre 2 cm. long or less.
- Involucre 1.5–2 cm. long.
 - Leaves or some of them 1.5–2 cm. long.
 - Inner involucral bracts obtusish or short-pointed. 8. *A. oligantha*.
 - Inner involucral bracts acuminate. 9. *A. bahamensis*.
 - Leaves 12 mm. long or less.
 - Leaves strongly spinulose-dentate. 10. *A. calcicola*.
 - Leaves repand-denticulate. 11. *A. parvifolia*.
- Involucre 1.5 cm. long or less.
 - Leaves 2–3 times as long as wide.
 - Leaves spinulose-denticulate.
 - Leaves strongly reticulated beneath. 12. *A. Wilsoni*.
 - Leaves not reticulated beneath, or faintly reticulated.
 - Achenes short-tomentose; leaves reticulate-veined above. 13. *A. intertexta*.
 - Achenes villous; leaves smooth above. 14. *A. Shaferi*.
 - Leaves entire-margined. 15. *A. obtusifolia*.
 - Leaves not longer than wide, or but little longer.
 - Leaves obtuse or truncate at base.
 - Involucre 6 mm. long. 16. *A. microcephala*.
 - Involucre 10 mm. long. 17. *A. Rosei*.
 - Leaves cuneate at base. 18. *A. Buchii*.
- 2. Involucral bracts recurved, or with recurved tips.
 - Involucral bracts arachnoid. 19. *A. Northropiana*.
 - Involucral bracts villous. 20. *A. recurva*.
- 3. Involucre known only in a young condition; leaves oblong, 4 cm. long, 1.8 cm. wide, entire-margined or with a tooth near the apex. 21. *A. lomensis*.

1. ANASTRAPHIA ILICIFOLIA D. Don, Trans. Linn. Soc. 16: 296.
1830

Gochnatia ilicifolia Less. Linnaea 5: 261. 1830 (attributed to Guiana doubtfully).

TYPE LOCALITY: South America [in error].

DISTRIBUTION: Limestone cliffs and river-gorges, provinces of Matanzas and Havana, Cuba. A shrub 2–3 m. high, the leaves shining above.

A specimen in Kew Herbarium from rocks on the Rio Canimar, Cuba, 1823, bears the label *Staehelina ilicifolia* Mutis., but that species is a South American *Gynoxys*.

2. *ANASTRAPHIA MANTUENSIS* C. Wright; Griseb. Cat. Pl. Cub.
158. 1866

TYPE LOCALITY: Pine lands near Mantua, Cuba.

DISTRIBUTION: Pine lands and rocky hillsides, near Mantua, Province of Pinar del Rio, Cuba.

3. *Anastraphia montana* sp. nov.

A depressed, spreading or prostrate shrub, the young twigs white-floccose. Leaves oblong, or oblong-ob lanceolate, 2–4 cm. long, 8–16 mm. wide, coriaceous, sharply spinulose-dentate all around, dark green, shining and densely reticulate-veined above, white-floccose beneath, obtuse or acutish at the apex, the floccose petioles 1–2 mm. long; heads solitary at the ends of branches; involucre campanulate about 2.5 cm. high, its bracts rigid, somewhat spreading, in about 8 series, the outer ovate to lanceolate, slightly lanate, acute, the inner linear-lanceolate, acuminate glabrous achenes linear, narrowed at base, densely appressed-pubescent, 6 mm. long; pappus light brown, spreading, about twice as long as the achene.

Top of Sierra Caliente, south of Sumidero, Pinar del Rio, Cuba, August, 1912 (*Shafer 13781*).

4. *Anastraphia Cowellii* sp. nov.

A shrub, 2 m. high, the young twigs lanate-puberulent. Leaves oblong, 1.5–3.5 cm. long, 6–15 mm. wide, coriaceous, sharply spinulose-dentate, green, glabrous, shining and indistinctly veined, but wrinkled above, brownish-floccose beneath, mostly obtuse at the apex, obtuse or narrowed at the base, the petioles 1–4 mm. long; heads solitary or rarely 2 together; involucre narrowly campanulate, about 3 cm. high, its bracts in 7 or 8 series, the outermost ovate, lanate, the middle ones lanceolate, the inner linear-lanceolate, acuminate, glabrous; corollas orange, 2 cm. long; achenes linear, 6–7 mm. long, densely pubescent; pappus brownish, spreading, about 3 times as long as the achene.

Rocky hills, palm barren, city of Santa Clara, Cuba (*Britton & Cowell, 10183, type*); same locality (*Britton & Wilson 6073*); rocky places in savanna, Queen City to Minas, Camaguey, Cuba (*Shafer 2927*); savanna near Camaguey (*Britton & Cowell 13248*).

5. *Anastraphia attenuata* sp. nov.

A shrub about 2.5 cm. high, the young twigs densely lanate. Leaves oblong to oblanceolate, 1.5–5 cm. long, 8–17 mm. wide,

coriaceous, entire or some of them remotely spinulose-dentate, green, glabrous and reticulate-veined above, whitish-lanate beneath, obtuse or acute at the apex, narrowed at the base, the petioles 1–2.5 mm. long; heads solitary at the ends of branches; involucre obconic, long-attenuate at the base, 3–3.5 cm. long, its bracts lanate, imbricated in about 14 series, the lower ovate, the upper lanceolate; corolla yellow, about 1 cm. long; achenes linear, densely pubescent, 6 mm. long; pappus tawny, a little longer than the achene.

Moist thickets, Sierra Nipe, Oriente, Cuba, between Piedra Gorda and Woodfred, at 400–500 meters elevation (*Shafer 3113*).

6. *ANASTRAPHIA PICARDAE* Urban, Symb. Ant. 3: 414. 1903

TYPE LOCALITY: Near Cadets, Haiti, at 1200 m. alt.

DISTRIBUTION: Known only from the type locality.

7. *Anastraphia crassifolia* sp. nov.

A shrub about 1.6 m. high, the young twigs densely tomentose. Leaves oblong, or oblong-ob lanceolate, coriaceous, 4–7 cm. long, 1–2 cm. wide, entire-margined, green, shining, and with impressed veins above, lanate-tomentose and with prominent veins beneath; involucre campanulate, nearly 3 cm. high, its bracts in 7 or 8 series, the outer ovate, lanate, the inner linear-lanceolate, glabrous, long-attenuate.

Near mangroves, mouth of Rio Yamanigüey, Oriente, Cuba (*Shafer 4261*). Only one old involucre was collected.

8. *ANASTRAPHIA OLIGANTHA* Urban, Symb. Ant. 3: 417. 1903

TYPE LOCALITY: Santo Domingo.

DISTRIBUTION: Santo Domingo. Known only from the type specimens collected by Wright, Parry and Brummell in 1871, and from *plate 123, f. 2*, of Plumier, with which they were identified by Professor Urban. Referred to by Hitchcock (Rep. Mo. Bot. Gard. 4: 102) as *A. pauciflosculosa* C. Wright, an unpublished species.

9. *ANASTRAPHIA BAHAMENSIS* Urban, Symb. Ant. 3: 415. 1903

Anastraphia pauciflosculosa Hitchc. Rep. Mo. Bot. Gard. 4: 102. *pl. 12*. 1893. Hyponym.

Anastraphia cuneifolia Greenm. Bull. N. Y. Bot. Gard. 4: 126. 1905.

TYPE LOCALITY: Andros Island, Bahamas.

DISTRIBUTION: Andros, Eleuthera, Cat Island, Fortune Island, Crooked Island, Acklin's Island, Great Exuma, Caicos Islands, Mariguana, Dellis Cay, Inagua.

I cannot distinguish, specifically, from this species, a plant of the Sierra Nipe, Oriente, Cuba (*Shafer 3185*).

10. *Anastraphia calcicola* sp. nov.

A shrub, 1-1.5 m. high, the young twigs lanate, the branches stiff. Leaves cuneate-obovate or nearly elliptic, small, 5-10 mm. long, nearly as wide as long, sharply 1-3-toothed on each margin, coriaceous, obtuse or subtruncate at the apex, glabrous and densely reticulate-veined above, white-lanate beneath, the petioles about 1 mm. long; heads solitary on short branchlets; involucre 1.5-2 cm. high, its bracts in about 4 series, loosely and sparingly lanate, the outer ovate, acute, the inner narrowly lanceolate, acuminate; achenes linear, 4 mm. long, densely pubescent; pappus yellowish-brown, about 3 times as long as the achene.

Coral rock hillsides and coastal cliffs, United States Naval Station, Guantanamo Bay, Oriente, Cuba (*Britton 2042, type; 2220*).

11. *Anastraphia parvifolia* sp. nov.

An upright shrub, 2 m. high, the young twigs lanate. Leaves oblong to oblong-obovate, small, 5-10 mm. long, 4-6 mm. wide, coriaceous, obtuse at the apex, obtuse or narrowed at the base, dark green, smooth and shining above, white-lanate beneath, the margin repand-denticulate, the slender petiole 1-3 mm. long; involucre about 2.4 cm. long, its bracts in 5 or 6 series, the outer ovate to ovate-lanceolate, loosely lanate, acute, the inner linear-lanceolate, acuminate, with lanate tips; corolla orange-yellow, 18 mm. long; achenes linear, densely pubescent, about 3 mm. long; pappus yellowish-brown, about 5 times as long as the achene.

Dense thickets in barren savannas southeast of Holguin, Oriente, Cuba (*Shafer 2938*).

12. *Anastraphia Wilsoni* sp. nov.

An intricately branched shrub 2 m. high, the young twigs somewhat lanate. Leaves oblong to oblong-obovate, subcoria-

ceous, 1–2.5 cm. long, 1 cm. wide or less, obtuse or acute at the apex, narrowed at the base, green, shining, and densely finely reticulate-veined above, brownish-tomentulose and prominently veined beneath, the margins strongly spinulose-dentate, the slender petioles 1.5–3 mm. long; heads solitary on short branchlets; involucre 1–1.5 cm. high, its bracts in about 8 series, the outer ovate, acute, densely lanate, the inner lanceolate to linear-lanceolate, attenuate, nearly glabrous; corolla 1.5 cm. long; achenes densely pubescent, 5 mm. long; pappus tawny, 3 times as long as the achene.

Rocky bank, Rio Toyaba, near Trinidad, province of Santa Clara, Cuba (*Britton & Wilson 5573*).

13. *ANASTRAPHIA INTERTEXTA* C. Wright; Griseb. Cat. Pl. Cub.
158. 1866

TYPE LOCALITY: Near San Marcos, district of Bahia Honda, Pinar del Rio, Cuba.

DISTRIBUTION: Mountain sides, Pinar del Rio, Cuba.

14. *Anastraphia Shaferi* sp. nov.

An intricately branched shrub 2–2.5 m. high, the young twigs lanate. Leaves oblong to oblong-ob lanceolate, 10–18 mm. long, 8 mm. wide or less, coriaceous, sharply spinulose-dentate, obtuse at the apex, narrowed at the base, green, glabrous and smooth above, whitish-lanate and rather prominently veined beneath, the petioles about 1.5 mm. long; heads solitary or sometimes 2 together at the ends of branchlets; involucre about 1 cm. long, its villous-lanate bracts in about 5 series, the outer ovate, the inner lanceolate, acuminate; corolla "whitish," about 11 mm. long; achenes villous-pubescent, 3 mm. long; pappus tawny, 2–3 times as long as the achene.

Dry cliff, below the falls of Rio Naranja, Oriente, Cuba, 450–550 m. elevation (*Shafer 3865*).

15. *Anastraphia obtusifolia* sp. nov.

An intricately branched shrub, the young twigs lanate-tomentulose. Leaves oblong to oblanceolate, 2.5 cm. long or less, 4–10 mm. wide, coriaceous, entire-margined, dark green and finely densely reticulate-veined above, white-lanate and inconspicuously veined beneath, obtuse at the apex, narrowed at the base, the petioles 1–1.5 mm. long; head (only one old one seen

attached) sessile, lateral; involucre 9–10 mm. long, its bracts in 5 or 6 series, the outer ovate, acute; the inner linear-lanceolate, acuminate.

Camp La Gloria, south of Sierra Moa, Oriente, Cuba (*Shafer 8189*).

16. *ANASTRAPHIA MICROCEPHALA* Griseb. Cat. Pl. Cub. 158. 1866

TYPE LOCALITY: Eastern Cuba.

DISTRIBUTION: Known only from the type specimens collected by Wright.

17. *Anaestraphia Rosei* sp. nov.

A shrub with tortuous branches, the young twigs floccose. Leaves broadly elliptic, elliptic-obovate or suborbicular, 10–15 mm. long, 8–13 mm. wide, obtuse or nearly truncate at the apex, obtuse or subtruncate at the base, dark green, loosely floccose or becoming glabrate, and finely reticulate-veined above, densely white-tomentulose and with few rather prominent veins beneath, spiny-toothed, with 2 or 3 teeth on each side, the slender tomentulose petioles 3–5 mm. long; heads solitary and sessile on short spurs, about 10-flowered; involucre narrowly obconic, 10–11 mm. long, its bracts in about 5 series, all appressed-villous, acute, the outer ovate, the inner linear-lanceolate; achenes densely silky, 4 mm. long; pappus yellow-brown, 8 mm. long.

Hillside, Azua, Santo Domingo, March 18, 1913 (*Rose, Fitch & Russell 4023*). Related to *A. Buchii* Urban, of Haiti, which has leaves cuneate at base, smaller heads and less hairy involucre-bracts.

18. *ANASTRAPHIA BUCHII* Urban, Symb. Ant. 5: 527. 1908

TYPE LOCALITY: Dry woods, Poste Coudau, Haiti, at 100 m. elevation.

DISTRIBUTION: Known only from the type locality.

19. *ANASTRAPHIA NORTHROPIANA* Greenm.; Combs, Trans. Acad. Sci. St. Louis 7: 435. *pl.* 36. 1897

Anaestraphia Northropiana Combsii Urban, Symb. Ant. 3: 417. 1903.

TYPE LOCALITY: Fresh Creek, Andros, Bahamas.

BAHAMA ISLANDS: Andros, New Providence, Cat Island.

CUBA: On rocky coastal hills, Punta Piedra, Nipe Bay, Oriente (*Britton & Cowell 12459*); harbor of Santiago, Oriente (*Britton 1877*); near Nuevitas, Camaguey (*Shafer 839*); Calicita, Santa Clara (*Combs 521*); Rio San Juan, Santa Clara (*Britton, Earle & Wilson 5839, 5864*); apparently the same species, collected in foliage only, on Cayo Ratones, Bay of Mariel, Pinar del Rio (*Britton & Gager 7678*). I cannot specifically distinguish the Cuban plant from the Bahamian; on the southern coast of Santa Clara Province it forms a tree up to 10 m. high with a trunk 2 dm. in diameter; its bark is very rough.

20. *Anaethaphia recurva* sp. nov.

A much-branched shrub up to about 3 m. high, the young twigs tomentulose. Leaves oblong to elliptic or oblanceolate, coriaceous, 4 cm. long or less, 8–15 mm. wide, green and smooth or somewhat reticulate-veined above, lanate beneath, obtuse or acute at the apex, cuneate-narrowed, acute or obtuse at the base, spinulose-dentate or entire, the petioles 1.5–3 mm. long; heads solitary at the ends of branchlets; involucre broadly campanulate, 1.5–1.8 cm. high, its bracts densely villous, imbricated in 6 or 7 series, recurved-spreading, linear-lanceolate, acuminate; corolla yellow or yellowish, about 1 cm. long; achenes densely whitish-pubescent, about 4 mm. long; pappus tawny, 2–3 times as long as the achene.

Serpentine hills near mouth of Rio Yamanigüey, Oriente, Cuba (*Shafer 4257; type*); between Rio Yamanigüey and Camp Toa, 400 m. alt. (*Shafer 4011*); vicinity of Camp San Benito, 900 m. alt. (*Shafer 4177*); Camp La Gloria, south of Sierra Moa (*Shafer 8187, 8266*); between Camp La Barga and Camp San Benito (*Shafer 4120*).

A species which has wide variation in leaf-forms; the involucre in all specimens seen appears to be the same.

21. *Anaethaphia* (?) *lomensis* sp. nov.

A shrub about 2.5 m. high, the twigs tomentulose. Leaves oblong, coriaceous, about 4 cm. long and 1.8 cm. wide, entire-margined, or rarely with a spinulose tooth near the apex, spinulose-tipped and acute, or rounded at the apex, narrowed or obtuse at the base, faintly reticulate-veined, green and glabrous above, lanate and rather prominently veined beneath, the petioles 2–3.5

mm. long; heads solitary or sometimes 2 together at the ends of twigs; young involucre 1 cm. long, its floccose bracts in about 5 series, acute, the outer ovate, the inner lanceolate.

Rocky mountain side, Loma Mensura, about 800 m. alt., Oriente, Cuba (*Shafer 3811*).

The leaves are similar to those of *A. Picardae* Urban, of Haiti.

38. UNDESCRIBED WEST INDIAN SPECIES

***Cyperus calcicola* sp. nov.**

Perennial by short rootstocks; culms slender, tufted, smooth, 1-2.5 dm. high. Leaves shorter than the culm, 0.5-1 mm. wide; bracts of the involucre 2 or 3, the longer sometimes 4 cm. long, similar to the leaves; head globose, solitary, 5-7 mm. in diameter; spikelets about 3-flowered, 3.5-4.5 mm. long; scales dark brown, the lowest empty ones persistent on the axis after the fall of the rest of the spikelet, lanceolate, the others ovate to ovate-lanceolate, acute, faintly striate-nerved.

Limestone rocks, Cayo Muertos, Porto Rico (*Britton, Cowell & Brown 4976*).

Related to *C. fuliginus* Chapm., in which the scales of the spikelet are more numerous, strongly striate-nerved and mucronate.

***Psilocarya portoricensis* sp. nov.**

Annual, with fibrous roots; culm rather slender, about 4 dm. high. Leaves shorter than the culm, 2-3 mm. wide; umbels several, slender-stalked; spikelets 3-5 in the umbels, ovoid, acutish, 4-6 mm. long, 2 mm. thick; scales ovate, dark brown, sharply acute; style rather deeply 2-cleft; achene oblong, 1 mm. long, transversely wrinkled; tubercle triangular, acute, one third to one half as long as the achene, and distinctly decurrent upon it.

Shore of Laguna Tortuguero, Porto Rico (*Britton, Cowell & Brown 3850*).

Nearest to *P. nitens* (Vahl) A. Wood, of eastern continental North America, the achene of which is smaller, suborbicular and the tubercle scarcely decurrent.

***Rynchospora borinquensis* sp. nov.**

Perennial by short rootstocks; culms slender, trigonous, about 6 dm. high. Leaves flat, about 2 mm. wide, shorter than the culm;

corymbs 2 or 3, distant, filiform-stalked, compound, narrow, 2–7 cm. long; spikelets clustered, fusiform, 5 mm. long, narrowed at both ends, bearing only 1 achene; scales lanceolate or oblong-lanceolate, dark brown, acute; bristles about 6, upwardly barbed, longer than the achene and tubercle; style-branches about one-third as long as the undivided part; achene oblong-obovate, faintly transversely wrinkled, 1.5 mm. long, a little longer than the smooth, conic, acute tubercle.

Open wet places in the forest, Rio Icaco and adjacent hills, Sierra de Naguabo, Porto Rico, 465–720 m. alt. (*Shafer 3515, type*); Sierra Nipe, Oriente, Cuba (*Shafer 3453, 3638*).

Apparently nearest *R. glauca* Vahl, which has shorter, ovoid spikelets, and a shorter tubercle.

***Cassia clarendonensis* sp. nov.**

A finely pubescent shrub about 1.3 m. high. Leaves linear in outline, 10–15 cm. long, bearing an obtusely conic gland 1 mm. high between the lowest pair of leaflets, the slender, pubescent rachis angular; leaflets 10–15 pairs, thin, pubescent on both sides, with very short pubescent petiolules, apiculate, inequilateral, the upper 2 or 3 pairs oblong, 1.5–2 cm. long, 6–7 mm. wide, the others elliptic to obovate-elliptic, shorter and slightly broader; flowers in several short pubescent panicles in the upper axils; pedicels 2–4 mm. long; sepals obliquely elliptic, obtuse, pubescent, 5–6 mm. long; petals yellow, obovate, veiny, about 9 mm. long, rather abruptly short-clawed; sepals 7; larger anthers curved, 7–8 mm. long, the smaller nearly straight, about 5 mm. long; style curved, about 11 mm. long; pods short-stalked in the calyx, linear, many-seeded, densely puberulent, 7–10 cm. long, 6 mm. wide, flat, impressed between the seeds, the margins scarcely thickened; seeds oblong, transverse, pubescent, about 4 mm. long.

Inverness, Clarendon, Jamaica (*Harris 11693*).

***Purdiaea velutina* Britton & Wilson, sp. nov.**

A shrub 3 m. tall, or a small tree; twigs villous. Leaves obovate, 4–10 cm. long, 2–3.3 cm. broad, rounded and emarginate or mucronate at the apex, gradually tapering to a rather broad sessile base, 5–7-ribbed, reticulate-veined, glabrous; bracts oblong-obovate or obovate, 15–24 mm. long, 6–9 mm. broad, velutinous on the back, glabrous within above the middle, below clothed with rather short, appressed silky hairs; peduncles and pedicels villous; one ciliate, the three outer ones unequal, ovate, 9–12 cm. long,

4–6 mm. broad, rounded or acutish and apiculate at the apex, papery, several nerved, the two inner sepals lanceolate, 5–6 mm. long, acuminate; petals lanceolate to narrowly ovate-lanceolate, 5.5–6 mm. long, 2–2.5 mm. broad, acute, glabrous; filaments subulate, glabrous; anthers oblong; ovary subglobose, villous.

Type collected along trail, Rio Yamanigüey to Camp Toa, Oriente, Cuba (*Shafer 4474*); also collected in the vicinity of Camp San Benito, Oriente, Cuba (*Shafer 4092*).

***Purdiaea Shaferi* Britton & Wilson, sp. nov.**

A shrub 2 or 3 m. tall; twigs glabrous or nearly so. Leaves broadly elliptic-obovate, 4.5–9.5 cm. long, 2.5–4.5 cm. broad, rounded and emarginate or mucronate at the apex, sessile, 7–9-ribbed, rather faintly and coarsely reticulate-veined, glabrous; bracts obovate, 12–14 mm. long, 7–8 mm. broad, papillose; peduncles and pedicels villous; sepals 5, ciliate, the three outer sepals very unequal, broadly ovate to ovate-oval, 8–12 mm. long, 4–8 mm. broad, rounded or acute and apiculate at the apex, papery, clothed mostly toward the base with appressed, silky hairs, several-nerved, the two inner sepals lanceolate, 5–6 mm. long, 2 mm. broad, acuminate; petals elliptic, 5 mm. long, 2.5–3.2 mm. broad, mucronate, glabrous; filaments subulate, glabrous; anthers oblong; ovary globose-ovoid, hirsute; style subulate.

Type collected in pinelands, vicinity of Baracoa, Oriente, Cuba (*Shafer 4285*).

***Purdiaea microphylla* Britton & Wilson, sp. nov.**

A shrub 1 or 2 m. tall; young twigs and branches of the inflorescence more or less hirsute. Leaves oblanceolate to obovate, 10–15 mm. long, 5–7 mm. broad, acute at the apex, cuneate at the base, sessile, rigid, faintly 3-ribbed, glabrous; sepals unequal, rigid, the three outer ones ovate to oval, 4 mm. long, 3 mm. broad, acute, the two inner sepals ovate, 3 mm. long, 1.2–1.5 mm. broad, apiculate, ciliate; fruit 5-lobed, the angles keeled, 5-celled, glabrous; style subulate, persistent.

Type collected at Camp La Gloria, south of Sierra Moa, Oriente, Cuba (*Shafer 8265*).

***Piriqueta cubensis* Britton & Wilson, sp. nov.**

A shrub 1–3 m. tall, the young twigs grooved, velvety-ferruginous with stellate hairs. Leaves oblanceolate or obovate, 4–8 cm.

long, 1–2.2 cm. broad, obtuse or acutish at the apex, cuneate at the base, petioled, above clothed with scattered stellate hairs, beneath velvety ferruginous with stellate hairs and reticulate-veined, the midvein and lateral nerves obscure or impressed above, prominent beneath; calyx-lobes oblong-lanceolate to ovate-lanceolate, 1.2–1.6 cm. long, 6–8 mm. broad, velvety-ferruginous; petals elliptic to somewhat oblanceolate, 1.6–1.8 cm. long, 5–6 mm. broad, glandular-ciliate; filaments filiform, glabrous; anthers oblong-lanceolate; ovary narrowly ovoid, tomentose; styles filiform, 2.5–2.7 cm. long, glabrous; capsule velvety-ferruginous, the valves ovate; seeds pyriform.

Type collected along trail, Rio Yamanigüey to Camp Toa (400 m. alt.), Oriente, Cuba (*Shafer 4190*); also collected on the Sierra Nipe, Oriente (*Shafer 3109*).

***Rheedia Hessii* sp. nov.**

Young branches angled, slender, the older ones terete. Leaves opposite, coriaceous, clustered on short lateral twigs, narrowly lanceolate, 1.5–2.5 cm. long, 6 mm. wide or less, narrowed at the base into stout petioles 2–3 mm. long, spinulose-acuminate at the apex, the midvein prominent beneath, very indistinct above, the lateral venation wholly obscure, the margins thickened; staminate flowers solitary in upper axils on pedicels about 4 mm. long; sepals suborbicular, about 3 mm. broad; petals obovate-elliptic, rounded at the apex, 5 mm. long; stamens numerous, the stout filaments 2–2.5 mm. long; anthers less than 0.5 mm. broad.

Indiera Fria, near Maricao, Porto Rico (*F. L. Stevens & W. E. Hess 3333*). In habit and in leaf-form this somewhat resembles *R. fruticosa* C. Wright, of Cuba.

***Mayepea cubensis* P. Wilson, sp. nov.**

A shrub 6 m. tall, the young twigs glabrous or nearly so. Leaves oblong-oblanceolate, 6–9 cm. long, 1.5–2 cm. broad, rounded and often emarginate at the apex, cuneate at the base, petioled, glabrous, impressed punctate, rigid; midrib more or less impressed above, prominent beneath, the primary veins few and rather inconspicuous; panicles terminal, shorter than the leaves, the branches glabrous; bracts oblong-lanceolate or narrowly lanceolate, hirsutulous; pedicels about 2 mm. long; calyx-lobes triangular, obtuse or acutish, sparingly hirsutulous on the outside, hirsutulous within mostly at or near the apex; petals oblong or somewhat oblong-lanceolate, 5.5–6.5 mm. long, 1.2–2 mm. broad,

glabrous, obtuse, several-nerved; stamens shorter than the petals; filaments 1 mm. long; anthers elliptic-ovate to broadly elliptic; ovary ovoid, glabrous; stigma subsessile, globose-ovoid or subglobose, sometimes slightly emarginate.

Type collected at mouth of the Rio Yamanigüey, Oriente, Cuba (*Shafer 4253*).

***Agalinis albida* Britton & Pennell, sp. nov.**

Annual; plant green, tending to blacken in drying. Stem 4–6 dm. tall, slender, with virgately ascending branches, obscurely striate-4-angled, glabrous; leaves opposite, or somewhat subopposite above, ascending or recurved-spreading, linear-subulate below to linear and longer above, entire, acute, those of the stem 1–2.5 cm. long, 0.5–1 mm. wide; bracts gradually much reduced; leaves thickened, minutely scabrous to scabro-roughened above. axillary fascicles none; racemes elongated, 2–16-flowered; pedicels ascending, slender, clavate, glabrous, in flower 0.5–1 mm. long, in fruit 2–3 mm. long, much shorter than the bracts; calyx-tube 2–2.5 mm. long, depressed-hemispheric, obscurely veined, $1/3-2/5$ the length of the capsule, somewhat truncate, its lobes 0.7–1 mm. long, broadly triangular to ovate-triangular, acute to acuminate; apex of tube and lobes within sparingly puberulent; corolla 10–15 mm. long, spreading, 7–10 mm. wide, membranous, its tube 8–12 mm. long, straight to slightly upcurved, its lobes 2–3 mm. long, rounded to truncate, all somewhat spreading, without minutely pubescent, within slightly pubescent about the bases of the filaments, pubescent below sinus and over most of basal portions of posterior lobes; lobes all ciliate, white, at times shaded with violet; posterior filaments 2.5–3.5 mm. long, anterior 5–6.5 mm. long, all somewhat lanose; anther-sacs 1–1.5 mm. long, oblong-lanceolate, acute to mucronate at base, lanose-pubescent with white hairs on the valvular surface, glabrous on the sides; style 4–5 mm. long, filiform, glabrous; stigma 2.5 mm. long; capsule 4 mm. long, depressed-globose, dark-brown; seeds 0.6–0.8 mm. long, lunate-triangular to narrowly quadrangular, slightly less than one-half as broad as long, irregular; testa pale, with reticulations delicate, brown, enclosing elongated angular spaces; intrareticular lines very fine, forming a network.

Wet, grassy pineland, western Cuba, Isle of Pines, and in Jamaica.

Type, *Colpotherinax* savanna, vicinity of Herradura, province of Pinar del Rio, Cuba, collected in flower and fruit August 26–30, 1910 (*Britton, Earle & Gager 6475*).

CUBA. Pinar del Rio: Guane (*Shafer 10662*); Herradura (*Hermann 291, 565*); Laguna Jovero (*Shafer 10937*); Laguna los Indios (*Shafer 10801*); Pinar del Rio (*Wright 2991 p.p.*); San Cristobal (*Wright 2991 p.p.*), Santa Clara: Cieneguita (*Combs 443*), Isle of Pines: Managua (*Palmer & Riley 1102*).

JAMAICA. Shooter's Savanna (*Harris 11160*); Upper Clarendon (*Harris 11100*).

Differs from other species of *Agalinis* bearing short-pedicelled flowers, spreading corolla-lobes and dark brown seeds (*A. purpurea* and near allies) by its leaves strongly ascending, but 1–2.5 cm. long, its corolla much paler, nearly or quite white, and relatively small, and by its seeds which are less than one-half as broad as long.

***Jacaranda Cowellii* Britton & Wilson, sp. nov.**

A shrub 1.5–2 m. tall, the young twigs, pedicels, calyx and corolla more or less glandular-pubescent; leaves once-pinnate, 2.5–6 cm. long, occasionally longer; petioles and rachis narrowly grooved; leaflets 8–15 pairs or more, opposite or subopposite, elliptic to oval or orbicular, 2–5 mm. long, 1.5–3 mm. broad, sessile, rigid, green and lustrous above, paler beneath, the margin strongly involute, the midvein impressed above, prominent beneath; bracts of the inflorescence oblong; calyx-lobes triangular-ovate or ovate, acutish, 2 mm. long; corolla-tube 2–2.5 cm. long, the lobes orbicular; filaments of the fertile stamens subulate, glabrous, the filament of the sterile stamen flattened, bearded below the middle, glabrous above, densely bearded at the apex; anthers oblong-elliptic; ovary ovoid, glabrous; style subulate; fruit elliptic or oblong-elliptic, the apex rounded, or abruptly short-acuminate with the tip acutish or obtuse.

Type collected in palm barrens in the vicinity of the city of Santa Clara, Cuba (*Britton & Cowell 13316*); also collected at the same locality (*Britton & Wilson 6071*; *Britton & Cowell 10174*); dry hill, Holguin, Oriente (*Shafer 12434*); barren savanna south-east of Holguin, Oriente (*Shafer 2940*).